

University of Dundee

Interdisciplinary Research in Law and Forensic Science: From 'silos' to systems.

Richmond, Karen

Published in:
Critical Issues in Science, Technology and Society Studies

DOI:
[10.3217/978-3-85125-625-3](https://doi.org/10.3217/978-3-85125-625-3)

Publication date:
2018

Licence:
CC BY-NC-ND

Document Version
Publisher's PDF, also known as Version of record

[Link to publication in Discovery Research Portal](#)

Citation for published version (APA):
Richmond, K. (2018). Interdisciplinary Research in Law and Forensic Science: From 'silos' to systems. In G. Getzinger (Ed.), *Critical Issues in Science, Technology and Society Studies: Conference Proceedings of the 17th STS Conference Graz 2018, 7th - 8th May 2018* (pp. 166 - 175). Technischen Universität Graz.
<https://doi.org/10.3217/978-3-85125-625-3>

General rights

Copyright and moral rights for the publications made accessible in Discovery Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from Discovery Research Portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain.
- You may freely distribute the URL identifying the publication in the public portal.

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.



Critical Issues in Science, Technology and Society Studies

Conference Proceedings of the 17th

STS Conference Graz 2018

7th – 8th May 2018

Imprint:

Critical Issues in Science, Technology and Society Studies

Conference Proceedings of the 17th STS Conference Graz 2018
7th-8th May 2018

Editor: Günter Getzinger

Layout: Stefanie Egger

© 2018 Verlag der Technischen Universität Graz

www.ub.tugraz.at/Verlag

ISBN: 978-3-85125-625-3

DOI: 10.3217/978-3-85125-625-3

ISSN: 2304-4233



This work is licensed under a
Creative Commons Attribution 4.0 International License.

<https://creativecommons.org/licenses/by-nc-nd/4.0/>

STREAM: General STS Topics

Interdisciplinary Research in Law and Forensic Science: From 'silos' to systems.

RICHMOND, Karen

Leverhulme Research Centre in Forensic Science, University of Strathclyde,
Dundee, United Kingdom

Current approaches to the interdisciplinary co-production of forensic-scientific knowledge claims tend to found on the belief that a shared understanding of the respective capabilities, and needs, of both forensic science and criminal justice, may enhance the co-production of knowledge and lead to improved communication. However, the results of empirical research into the Streamlined Forensic Reporting (SFR) scheme, in England and Wales, appear to confound this 'contest and communication' narrative. SFR signals an almost complete co-option of scientific processes by the criminal justice system, the concomitant loss of interpretative forensic expertise, and the avoidance of the allocation of epistemic responsibility. Such instrumental approaches to forensic reporting may be traced to the disruption, and restructuring, of the forensic profession. Nonetheless, it is argued that the application of legal norms and rationality to forensic science may be better understood through the lens of legal autopoiesis, and should be viewed as an instance of the structural coupling of competing sub-systems.

Introduction: the 'contest and communication' narrative

Previous commentators have tended to view law and forensic science as operating in isolated silos. This popular explanation for the interdisciplinary co-production of forensic-scientific knowledge claims is predicated upon a belief that institutional agents from the legal and scientific fields are 'siloe'd' within their respective domains. 'Siloe'd' refers to the phenomenon whereby particular centres of organization and activity become isolated in terms of their constituent processes and systems. These centres of organization become self-referential in terms of their conceptualisations, leading to a lack of communication with other centres, and a lack of understanding of the needs of other systems. It occurs when domains, departments, or management groups, do not share information, goals, tools, priorities and processes with other departments. Or it may occur when those networks, which facilitate the sharing of goals, are attenuated or unavailable. The phenomenon may therefore refer to either an intra-disciplinary, or a homologous, process, occurring across disciplinary boundaries.

The subsisting view, as regards the silo-ed nature of law and forensic science, aligns with a narrative in which it is posited that improved communication, and an understanding of each other's needs, may lead to positive creative tension and the co-production of knowledge. Indeed, the majority of accounts of the production of forensic-scientific knowledge claims rest on just such a narrative, which highlights the lack of meaningful communication between forensic scientists and legal professionals. The corollary of this 'contest and communication' narrative is that many of the difficulties encountered by these two discrete fields may be overcome through

improved communication, and a mutual appreciation of both context and milieu. Solutions have therefore tended to be practical, and pragmatic, rather than theoretical, and epistemological. Thus the 'contest and communication' narrative is generally associated with the view that the forensic, and legal, fields operate from within discrete 'silos', and that the degree to which professionals become 'silo-ed' is exacerbated in an adversarial context.¹ Such views - routinely expressed in the forensic-scientific field - are echoed by members of the judiciary, and the legal profession. Lord Thomas, the Lord Chief Justice of England and Wales, perceives just such a communication problem, and likens it to the challenge facing comparative lawyers, whom he commends for their success in unearthing common legal concepts.

'It is now accepted that the work of comparative lawyers, whose discipline was based on finding differences, and the globalization of many legal concepts, particularly the rule of law as applicable to all governmental action and the right to a fair and open trial, have brought about a considerable narrowing of the differences.'²

It may be argued, in counterpoint, that the desire to mobilise commonly held concepts is based on an idealised conception of the underlying similarities between two heterogeneous disciplines, whose normative bases may be dissimilar, if not completely divergent. Indeed, data from an empirical study into the marketisation of forensic science in England and Wales³ provides only partial support for the contest and communication narrative, as advanced by Lawless, Kelty, and members of the Judiciary.⁴

The data (discussed below) reveals that scientific informants speak predominantly of processes of intra-disciplinary fragmentation and stratification, and external control, which do not necessarily equate to autonomy and isolation, or lend support to the assertion that enhanced communication would lead to greater interdisciplinary understanding. Further, the process of 'siloing' has both a descriptive, and a normatively prescriptive, dimension. Therefore, even if it does accurately describe the co-production of forensic-scientific knowledge claims, the degree of divergence may be so deep as to thwart mutual understanding and enhanced interdisciplinarity. Further, the presence of acute power asymmetries and the instrumental uses of forensic science. – as evidenced by the research data – may render any such attempts impossible.

1 See Kelty, SF; Julian, R; and Ross, A. *Dismantling the Justice Silos: avoiding the pitfalls and reaping the benefits of information-sharing between forensic science, medicine and law*. Forensic Science International ; Jul 10;230(1-3): pp.8-15.

2 Thomas, LCJ. 2015 *The legal framework for more robust forensic science evidence*. Philosophical Transactions of the Royal Society B 370: 20140258 at page 1.

3 Richmond, K (2018) *Marketised Forensic DNA Profiling in England and Wales* Doctoral Thesis (Law), University of Strathclyde

4 Lawless, C. (2010). *A Curious Reconstruction? The Shaping of 'Marketized' Forensic Science*. CARR Discussion Paper 63; Lawless, C. *Policing Markets; the Contested Shaping of Neo-Liberal Forensic Science*. British Journal of Criminology (2011) 51, 671-689; Kelty, SF; Julian, R; and Ross, A. *Dismantling the Justice Silos: avoiding the pitfalls and reaping the benefits of information-sharing between forensic science, medicine and law*. Forensic Science International ; Jul 10;230(1-3): pp.8-15; Thomas, LCJ. 2015 *The legal framework for more robust forensic science evidence*. Philosophical Transactions of the Royal Society B 370: 20140258 at page 1.

These disparities are facilitated by the lack of a shared conceptual framework, terminological fluidity, and a lack of expert understanding of other agencies needs. As a forensic expert, and QC, indicated:

'I think there's a lot of language used where people assume that they understand what they're saying and meaning but in fact they don't understand what each...actually means by it... It's simply that there are a number of walls, if you like, not just silos, but walls, that stop people from thinking laterally about what the market actually is.'

This view would tend to contradict the typical view of Lawless and Williams, for example, who view the legal and forensic fields, as '[combining] in a mutually constitutive relationship to form a mode of production of scientific commodities, purchased by the police in support of criminal justice objectives.'. Further, the limitations of this current perspective have been thrown into deeper relief by the introduction of non-expert forms of forensic reporting, in particular the innovative Streamlined Forensic Reporting programme.

Streamlined Forensic Reporting

Streamlined Forensic Reporting is an innovative evidential procedure, which was introduced across England and Wales from 2012, for the purposes of criminal case management, and the construction of forensic evidence. Its stated aim is to minimise bureaucracy, and to reduce unnecessary costs and delays in the criminal justice system. Indeed, the scheme operates 'by taking a more proportionate approach to forensic evidence through the early preparation of a short report that details the key forensic evidence the prosecution intends to rely upon.'¹ The objective is thus to avoid the costs associated with thorough forensic analysis by encouraging an early guilty plea. In circumstances where such a plea cannot be elicited, the scheme aims to secure agreement on forensic issues with the defence counsel at the earliest stage. Should such agreement be unattainable, SFR places an obligation on the defence to identify the problematic issues.

The SFR scheme was established throughout England and Wales as part of the Ministry of Justice's 'Criminal Justice System Efficiency Program', which aims 'to [modernise] the CJS by reducing or removing the movement of paper, and people, around the system.'²

The Government White Paper, *Swift and Sure Justice*,³ sets out the objectives of the program:

'From a so-called 'system' which operated in silos, we are moving to a criminal justice service where police, prosecution and courts work more effectively together. None of these reforms will compromise historic legal rights or important principles of justice. Rather the reverse: justice must be swift, sure and seen to be done, or it is not done at all.'⁴

1 ACPO, *Communication Strategy – Streamlined Forensic Reporting* (2012)

2 Ministry of Justice *Defence Practitioner FAQ*, Version 3.92 (14th May 2012)

3 Ministry of Justice. (2012) *Swift and Sure Justice: The Government's Plans for Reform of the Criminal Justice System*. (Cm 8388). London: TSO.

4 *Ibid.* at p.4

The targets of the reforms are criminal cases, which the Ministry of Justice categorises as 'low-level, straightforward and uncontested...where a quick response is appropriate'.¹ Such cases are to be dealt with 'promptly and efficiently' and, in order to better dispense 'swift justice', the CJS Efficiency program seeks to 'transform criminal justice from a fragmented, paper-based system to a seamless, digital service.'² In pursuance of these objectives, the program embraces technological innovations, such as the introduction of digital case files, increased use of video technology in proceedings, and the harnessing of social media to communicate with the general public.

However, the use of these non-expert reports, which are frequently compiled by untrained police administrators, has led to serious concerns. Interviews with DNA profiling experts expressed just such concerns, focussing on the loss of expert evaluation and interpretation within the SFR process, and the concomitant loss of contextual information. The responses below, taken from semi-structured interviews with a cohort of DNA profiling experts in 2015-16, were typical:

'...there's a very strong cohort of individual scientists usually, who feel that [SFRs] are misleading because (a) they don't allow a scientist to talk about the context because they're very formulaic and (b) they don't provide any sort of context to the findings.' (DR)

'With SFRs they've taken the expert out of the process. Previously, the expert had an overview. Now, its only when the defence gets it that we have the necessary overview.' (FE)

'They are relying on the reputation of DNA but with none of the science underpinning it.' (DI)

'Because there is not technical note and so little information, it's very hard to challenge. A lawyer wouldn't know what to challenge and a defendant couldn't get the funds to challenge it.' (MB)

Subsisting theories do not account for the instrumental use of non-expert forms of forensic reporting. For example, Edmond³ has posited that rational representations of law and science do not merely serve the originating discipline - they also serve to structure the interdisciplinary co-production of forensic-scientific claims. Such ideal cross-representations may be unproblematic when applied within the context of a rigorous legal interrogation of an exhaustive and contextual expert evaluation, which conforms to agreed scientific standards. However, it is debatable to what degree these representations continue to apply when law, and science, departs from these exhaustive standards, particularly through innovative forms of reporting which are characterised by power asymmetries, and the instrumental uses of forensic scientific knowledge claims?

Indeed, any perceived similarities may be limited in scope, superficial, and may mask differences in conceptual frameworks and usages. A more detailed discussion of the incommensurable normative bases of law and science will take place within the theoretical

1 *Ibid.* at p.5

2 *Ibid.* at p.43

3 Edmond, G (2001); *The Law Set ; The legal-scientific production of medical propriety* Science, Technology and Human Values, 26(2), 191-226; see also Mercer, *Op. Cit.* at note 12 ; Lynch, *et. al.* at p.45; Lawless, C (2016) *Forensic Science: A Sociological introduction* (Routledge: New York) at page 3;

discussion of legal autopoiesis. However, for present purposes, it should be noted that this incommensurability also afflicts those Neo-Weberian perspectives, which focus on the ways in which professional groups further their collective interests, through processes of inclusion and exclusion. Such theories view scientific controversy, and consensus-building, as activities central to the shaping of group cohesion.¹ A further version of this demarcation theory revolves around the proposition *that disciplines and professions themselves define their borders, through 'boundary work'*. Thus, the practice of inclusion and exclusion comes to determine what is science, and what is non-science. Such accounts, it is argued, are more adequately explained from an autopoietic perspective.

It may be pertinent, at this point, to discuss the ways in which forensic expertise travels across legal, and scientific, disciplinary boundaries by returning to Wynne's seminal Science and Technology Studies (STS) research into the tacit knowledge of Cumbrian hill farmers, exhibited in the wake of the Chernobyl reactor incident.² Wynne was able to demonstrate that the hill-farmers possessed a significant body of tacit knowledge, and expertise (by Collins' definition), which complemented the certified expertise of nuclear experts. However, they lacked the interactional expertise necessary to enter into a dialogue with the certified experts. As Jasanoff states,

'the farmers and radiation experts possessed different, complementary knowledges about local soils, grazing conditions, and radioactive cesium uptake into vegetation...but more significant is the fact that these discrepancies were rooted in different life worlds, entailing altogether different perceptions of uncertainty, predictability and control. The knowledges stemming from these divergent experiential contexts were not simply additive; they represented radically 'other' ways of understanding the world.'³

Jasanoff's account of Wynne's study highlights the incommensurability of heterogeneous disciplinary, and non-disciplinary, perspectives, which share no common context – whether perceptual, cognitive, or epistemological – and of the inability of non-experts to account for, and overcome, such limitations. Wynne's experience resonates with Kruse' ethnographic account of the co-production of legal and forensic narratives:

1 See Collins, H. & Evans, R. 2007, *Rethinking Expertise* (University of Chicago Press: Chicago); Lawless, C (2016) *Forensic Science: A Sociological introduction* (Routledge: New York) at page 3;

2 Wynne, B. (1989). *Sheepfarming after Chernobyl: A case study in communicating scientific information. Environment: Science and Policy for Sustainable Development*, 31(2), 10-39.

3 Jasanoff, S. (2003) *'Breaking the Waves in Science Studies: Comment on H.M. Collins and Robert Evans, 'The Third Wave of Science': Social Studies of Science* 33/3(June 2003) pp. 389–400 at p.390; it is argued below that, in accordance with autopoietic theory, the hill-farmers knowledge failed to overcome the binary coding (scientific/unscientific) of the science sub-system.

'[Legal and forensic] worlds are quite different...On closer inspection it becomes apparent that we...share a language only on a superficial level.'¹

Evidence from empirical studies of legal, and forensic-scientific, interactions would tend to support these views.

Autopoietic theories of interdisciplinary communication

A focus on the problematic semantic relations of competing legal and scientific discourses (above) resonates with communicative accounts of social organization, particularly Luhmann and Teubner's theory of autopoiesis. Autopoietic theory is predicated on a definition of society as being composed of communications, rather than individuals (and their social groups). Thus, the concept of the 'expert', as an autarchic agent, is dispensed with from the outset (further, the concept of enculturation is relegated to the first order social sub-system).

Nonetheless, communications may be grouped together in self-propagating societal sub-systems. The interactions between these different spheres of knowledge – particularly the scientific, and governmental – has been the subject of renewed attention amongst systems theorists and, in particular, proponents of autopoiesis. Luhmann², Teubner³, and King⁴, together argue that modern society has become so complex that rationality itself has fragmented. They view society as a complex system containing a group of sub-systems and argue that these sub-systems – such as law, or science – are completely self-contained, and completely self-referential. However, they may attempt to translate and absorb knowledge from each other in order to resolve internal conflicts. They propose that each of these discrete sub-systems is cognitively open to its environment but normatively (or operationally) closed. Thus, data can enter the sub-system from outside but such data will be devoid of any meaningful normative content, the normative content being applied by the sub-system itself. In other words, science and law may handle the same elements but will understand them in completely different ways which accord with the internal logic of their respective subsystems.

Luhmann and his followers go into some detail on the ways in which information (such as an expert opinion) may be transposed from one sub-system to another. The legal sub-system filters communications and reconstructs them according to its own norms. Some non-legal discourses are considered capable of reproduction within the sub-system, while others are disqualified, since each sub-system filters data according to a process of binary coding. For example, the legal system filters data according to the coding lawful/unlawful. The science sub-system filters data according to the encoding true/false. This filtering process allows the legal sub-system to make use of scientific information ('resonant stimuli', in autopoietic terms) without ever being

1 Kruse, C. (2013) *The Bayesian approach to forensic evidence: Evaluating, communicating and distributing responsibility*. Social Studies of Science 2013 43: 887

2 See Luhmann, N. *Operational Closure and Structural Coupling* (1992) Cardozo Law Review 13/5 (1992), 1434 and Luisi, LP. *Autopoiesis: a review and a reappraisal* Naturwissenschaften (2003) 90:49–59

3 See Teubner, G. ed. (1988) *Autopoietic Law: A New Approach to Law and Society* (Berlin, New York: Walter de Gruyter) and *Law as an Autopoietic System*, (1993), Oxford: Basil Blackwell

4 See King, M. and F. Kaganas, *The Risks and Dangers of Experts in Court* (1998) 1 Current Legal Issues 221–42; *An Autopoietic Approach to the Problems Presented by Parental Alienation Syndrome* (2002) 13 Journal of Forensic Psychiatry 609–35, *The 'Truth' About Autopoiesis* 20 Journal of Law & Society 218 1993 and *The Construction and Demolition of the Luhmann Heresy* Law and Critique 12: 1–32, 2001.

truly aware of the *nature* (the epistemological context) of the information that exists within the scientific sub-system.

A more detailed account reveals that these autopoietic discourses are marked by 'semantic closure', such that the sub-systems to which they correspond share no substantial, or teleological, rationality: a discourse emanating from a competing subsystem must function as a text congruent with the semantics of the legal sub-system in order to register as a perturbation. Only then will it register as a stimulus capable of triggering a response. These perturbations are perceived as 'noise' within the system environment, which, if too intense, may lead to dysfunctionalities. The criterion for successful translation is therefore to create resonance. Once resonant events in the external environment 'enter' the domain of legal communications (by means of simulacra created within the system environment) they are inevitably transformed, or reconstructed, by the legal sub-system in ways that allow for conversion into events recognizable as legal communications. Further, the recursive application of these 'internally constructed externalities' allows for the creation or confirmation of rules to govern further reconstructions of similar events.¹

As soon as the relationship has been established between law, and events in other systems, the way is open for the relationship to continue and for future events in the social world of a similar nature to automatically give rise to shadowing within the legal system. In the language of autopoietic theory a *perturbation* in the social environment, which enters the meaning-system of law, creates a *structural coupling* at the point of perturbation between law and any other systems, both social and psychic, involved in generating the perturbation. From this moment, developments within non-legal systems are coupled to parallel but independent developments in the legal system through linkage institutions that bind law to diverse social discourses.

Structural coupling is but one example of a variety of processes that bind law to diverse social discourses. Alternative outcomes are possible, dependant on the interaction of elements and system processes (emergence, interference and interpenetration). These outcomes have been explored in a diverse body of legal research papers dealing with normative subjects such as the identification of 'syndromes' and 'best interests', the identification of 'risk', 'toxic tort' litigation, and the concept of 'reasonableness'. The diverse studies are united in their conclusions: when dealing with expert opinion, the law reconstructs its own (legal) image of the external system within itself, and disagreements between experts must therefore be settled in compliance with law's conception of expertise.

Therefore, in practical terms, any attempt to investigate law's interactions with expert truth claims from an autopoietic perspective will concern itself with the way in which the legal sub-system filters forensic scientific communications and reconstructs them according to its own logical imperatives. The production of forensic-scientific knowledge claims provides an opportunity to

1 The binary coding true/false, which regulates inputs to the scientific subsystem, is homologous to the scientific/unscientific criterion employed by the US Supreme Court in *Daubert v Merrel Dow Pharmaceuticals*. It may be seen, in autopoietic terms, as an attempt by the legal sub-system, to resolve internal perturbations through the translation of information from a competing sub-system. While the courts recognise that scientific opinion can be useful in resolving law's internal problems, nonetheless, it is the 'system rationality' of the latter system which defines the normative elements that apply to scientific inputs. The connection, thus made, establishes a 'structural coupling' between the legal and scientific sub-systems which is then used control the input of information from the scientific sub-system and to allow for parallel development.

explore an instantiation of legal autopoiesis, particularly the ways in which certain non-legal discourses are deemed capable of reproduction within the legal sub-system, whilst others are disqualified. Thus, autopoietic theory may shed light on the nature of the relations between the filtering processes and the epistemic authority of competing legal and scientific discourses.

In conducting such an analysis, the focus of inquiry must converge on the structures and processes that govern interactions between law and the discourses of the scientific sub-system (of which forensic science is a part).

Autopoiesis and Forensic Science

The Streamlined Forensic Reporting scheme provides an opportunity to explore an instantiation of legal autopoiesis, particularly the ways in which certain non-legal discourses are deemed capable of reproduction within the legal sub-system, whilst others are disqualified. Thus, autopoietic theory may shed light on the nature of the relations between the filtering processes and the epistemic authority of competing discourses.

The objectives of Streamlined Forensic Reporting, as stated by the Ministry of Justice, refer to the need to move beyond a 'so-called system which operates in silos' towards an effective multi-agency partnership. This impulse to reconcile the truth claims of agents from competing disciplines, each grounded in its own epistemological traditions, resonates with the autopoietic theoretical perspective. In order to better understand the ways in which distinctive discursive outcomes may be attributable to the unique features of Streamlined Reporting, it is necessary to discuss the role of meaning and power in autopoietic theory.

However, prior to any attempt to apply autopoietic theory to the production of interdisciplinary forensic-scientific communications, it is first necessary to address the fundamental question of whether the forensic-scientific field can be said to constitute a discrete sub-system in its own right. This may only be possible if the semantic artefacts produced by the forensic-scientific field are incapable of reproduction by other fields. It is posited that such semantic artefacts are capable of reproduction within the larger scientific field. It is questionable to what extent the forensic-scientific field can be said to be capable of autopoiesis insofar as it does not apply its own norms, and is not operationally enclosed by a specific binary encoding. Therefore, it may be concluded that forensic science should be treated as constituting a body of communications within a greater 'scientific' subsystem.

This body of communications interpenetrates the legal sub-system as the result of a process of structural coupling.¹ This is but one example of a variety of processes that bind law to diverse social discourses. Alternative outcomes are possible, dependent on the interaction of elements and system processes (emergence, interference and interpenetration). However, the 'transformational grammar' of the interaction between the legal and forensic-scientific sub-systems, is best understood as structural coupling, which provides the best macro-theoretical explanation of the way in which the process governs the creation of legal-scientific truth claims. In order to better understand the ways in which distinctive discursive outcomes may be attributable to the structural coupling process, it is first necessary to discuss the role of meaning and power in autopoietic theory.

¹ It may be argued that Mercer's hybrid-set is, in reality, an example of structural coupling between law and science.

As noted above, the legal sub-system is cognitively open but normatively closed. Thus, it is for the legal sub-system to impart meaning onto those messages that resonate with the binary coding lawful/unlawful. Crucially, the meaning of a message depends on the context of the message i.e. the set of possible messages from which it is selected. Since the context of a message cannot be communicated, or directly observed, the meaning of a message is always inferred by the (legal) observer. Inferences with regard to the meaning and context of forensic knowledge imparted by forensic reports are shaped through a reductive process, which constrains the set of possible contextual messages, from which the content of the report is selected, to a further binary: match/non-match. As King states,

'The normative communications of other systems cannot simply be reproduced by law as legal communication. They first have to be reconstructed as law if they are to become accepted as law, and this reconstruction process may well give rise to unforeseen distortions and reductions to the meaning of the original communications as they were formulated in [other] systems.'¹

Thus, certain forensic-scientific mechanisms (DNA/Bayes, and streamlined reporting) may provide the means for the reformulation and reconstruction of forensic discourse, at the point at which that discourse threatens to import a penumbra of 'unhelpful' meanings and contextual choices. Such a view is predicated on the existence of a differential power arrangement between competing sub-systems.

Although autopoiesis does not address hierarchical or hegemonic issues as directly as other theoretical perspectives, it nevertheless takes account of inequalities of power, and domination of one sub-system by another. As King states,

'the relationship between social meaning systems is not necessarily one of equality. Although it is theoretically possible for each social system to reconstruct every other system according to its own procedures and to attribute its own meaning to that system, those systems which are widely accepted as defining meanings for the whole of society are in a much more powerful position than others.'²

Such is the possible degree of refraction across discrete sub-systems that it is possible to speak of 'the enslavement' of the knowledge of one meaning system by another.' This is particularly true of interactions involving economics, politics, science, and law and may account for the reformation of scientific discourses through procedural means, in particular the CAI and SFR processes. This need not imply that the scientific sub-system is prevented from asserting an alternative meaning to forensic information, since alternative contextual options are available:

'It is always possible for the less prevalent systems to insist on their own self-constructions and indeed to reconstruct successful meaning systems according to their particular procedures and reality versions. The problem these weaker systems face, however, is to convince society, the world

1 King, M. *The Truth About Autopoiesis* (1993) Journal of Law and Society Vol. 20 No.2 at page 466

2 *Ibid.* at p.467

of social communications, to accept their versions of reality in preference to those of the more prevalent.¹

Thus, central to law's reconstruction of the social world is the way in which law (re)constructs people – including 'expert' forensic scientists – 'as semantic artifacts of the legal system', in ways which reflect existing power relationships and enhance the self-reproductive potential of the legal sub-system. The reconstruction of forensic expertise is central to this process, and is achieved through shaping of the processes, and contextual factors, which govern the production of forensic-scientific knowledge. These aspects of forensic knowledge production will form the subject of the final chapter in this section.

Conclusions

Those discourses which explore the boundaries of the legal system tend to focus on the potential for interdisciplinary communication to diminish barriers and to enhance the mutual understanding of unrelated disciplines. Such approaches are frequently encountered in discussions relating to the consumption of scientific truth claims by the criminal justice system. The UK Ministry of Justice, for example, speaks of the need to move beyond a 'so-called system which operates in silos' towards an effective multi-agency partnership. Similar statements can be found in jurisdictions across the globe. However, from an autopoietic perspective, these impulses to reconcile the truth claims of agents from competing disciplines – each grounded in its own epistemological traditions – may be misplaced and deserve closer analysis.

This study uses Teubner's theory of legal autopoiesis to explore cross-boundary relations between the legal and scientific sub-systems. It derives from research into the introduction of Streamlined Forensic Reporting in England and Wales (a non-expert form of forensic reporting which restricts DNA reports to a 'match' or 'non-match'). This new form of inter-disciplinary communication provides opportunities to explore the ways in which certain non-legal discourses are deemed capable of reproduction within the legal sub-system, whilst others are disqualified.

The study disseminates research results, which demonstrate that, in accordance with autopoietic theory, it is for the legal sub-system to impart normative meanings onto those messages. Further, that meaning depends on context. And that context is drawn from the set of possible messages from which the resonant input is selected. Thus, inferences with regard to the meaning and context of forensic knowledge imparted by Streamlined Reports must be shaped through a reductive process, which constrains the set of possible messages from which the content of the report is selected. The study thereby demonstrates that the SFR scheme provides the legal system with a means to reformulate and reconstruct forensic discourse, at the point at which that discourse threatened to import a penumbra of 'unhelpful' meanings and difficult contextual choices.

1 *Ibid.*